Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

It is claimed:

1. (Original) An orthogonal frequency division multiplexing (OFDM) system for generating a modulated orthogonal multi-carrier signal, comprising:

an over sampling logic to generate an *MN* over sampled data frame from an *N* sample data frame, wherein said *MN* over sampled data frame comprises *M* - 1 zeros between consecutive samples;

a wave shaping filter to perform convolution of said over sampled data frame with *MN* filter coefficients to produce an *MN* complex filtered sample frame in order to modify the frequency response of said modulated orthogonal multi-carrier signal in the frequency domain;

a spectrum mask to modify said *MN* complex filtered sample frame respectively by *MN* elements to produce an *MN* complex filtered and masked sample frame in order to further modify the frequency response of said modulated orthogonal multi-carrier signal; and

an inverse fast Fourier transform (IFFT) to generate said modulated orthogonal multi-carrier signal from said *MN* complex filtered and masked sample frame.

2. (Original) The OFDM system of claim 1, further comprising a modulation and framing logic to generate said *N* sample data frame by modulating a binary data frame.

3. (Original) The OFDM system of claim 2, wherein said modulation and framing logic performs phase shift keying (PSK) type modulation, coherent or differential.

4. (Original) The OFDM system of claim 2, wherein said modulation and framing logic performs amplitude shift keying (ASK) type modulation.

5. (Original) The OFDM system of claim 2, wherein said modulation and framing logic performs quadrature amplitude modulation (QAM).

6. (Original) The OFDM system of claim 1, further comprising a framing and overlapping logic to frame in time said modulated orthogonal multi-carrier signal and overlap in time consecutive frames of said modulated orthogonal multi-carrier signal.

7. (Original) The OFDM system of claim 1, further comprising a spectrum control input to receive information relating to a desired spectrum for said modulated orthogonal multi-carrier signal and to control said spectrum mask to produce said desired spectrum for said modulated orthogonal multi-carrier signal.

8. (Currently Amended) A method of producing a modulated multi-carrier signal, comprising:

receiving an input frame of data samples~~ to be modulated onto said multi-carrier signal~~; and

performing frequency domain modification on said input frame of data samples through use of a wave shaping filter to result in power spectral shaping for said modulated multi-carrier signal through alteration of power levels of side lobes associated with resultant sub-carrier signals; and

modulating respective frequency modified data samples onto a plurality of sub-carriers signals to generate said modulated multi-carrier signal.

9. (Original) The method of claim 8, wherein performing said frequency domain modification on said input frame of data samples comprises using a wave shaping filter to perform said frequency domain modification.

10. (Currently Amended) The method of claim 8~~9~~, wherein said wave shaping filter comprises an finite impulse response (FIR) filter.

11. (Currently Amended) The method of claim 8, wherein performing said frequency domain modification on said input frame of data samples further comprises using a spectrum mask to cause suppression of one of the side lobes~~perform said frequency domain modification~~.

12. (Currently Amended) The method of claim 8, wherein modulating respective frequency modified data samples onto said plurality of carriers comprises performing an inverse Fast Fourier transform on said frequency modified data samples.

13. (Original) The method of claim 8, further comprising controlling said frequency domain modification to achieve a desired spectrum for said modulated multi-carrier signal.

14. (Original) An orthogonal frequency division multiplexing (OFDM) system for generating a modulated and filtered orthogonal multi-carrier signal, comprising:

an inverse fast Fourier transform to generate N modulated orthogonal carrier signals from an N-sample data frame;

an M time cyclic extension to increase the frequency resolution of respective N modulated orthogonal carrier signals by a factor of M; and

an MN point time-domain filter to modify the frequency response of said higher frequency resolution, modulated orthogonal carrier signals to form said modulated and filtered orthogonal multi-carrier signal.

15. (Original) The OFDM system of claim 14, further comprising a modulator to generate said *N* sample data frame by modulating an *N* sample baseband data frame.

16. (Original) The OFDM system of claim 15, wherein said modulator comprises a phase shift keying (PSK) type modulator, coherent or differential.

17. (Original) The OFDM system of claim 15, wherein said modulator comprises an amplitude shift keying (ASK) type modulator.

18. (Original) The OFDM system of claim 15, wherein said modulator comprises a quadrature amplitude modulator (QAM).

19. (Original) The OFDM system of claim 14, further comprising a framing and overlapping logic to frame in time said modulated and filtered orthogonal multi-carrier signal and overlap in time consecutive frames of said modulated and filtered orthogonal multi-carrier signal.

20. (Original) The OFDM system of claim 14, further comprising a spectrum control input to receive information relating to a desired spectrum for said modulated orthogonal multi-carrier signal and to control said *M* time cyclic extension and said *MN* point spectrum filter to produce said desired spectrum for said modulated and filtered orthogonal multi-carrier signal.

21. (Currently Amended) A method of producing a modulated multi-carrier signal, comprising:

receiving an input frame of data samples to be modulated onto said multi-carrier signal;

modulating said data samples onto a plurality of carrier signals~~, respectively~~; and

performing time domain modification of said carrier signals to <u>conduct spectral shaping of and to</u> form said modulated multi-carrier signal<u>, said time domain modification comprises (i)</u>

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increasing a frequency resolution of the plurality of carrier signals, and (ii) using a spectrum filter to perform spectral shaping of said modulated multi-carrier signal.

22-23. (Cancelled).

24. (Currently Amended) The method of claim 21, wherein modulating said data samples onto said plurality of carrier signals, respectively comprises performing an inverse Fast Fourier transform on said modulated data samples.

25. (Original) The method of claim 21, further comprising controlling said time domain modification to achieve a desired spectrum for said modulated multi-carrier signal.

26. (New) The OFDM system of claim 1, wherein the first value M and the second value N are integer values.

27. (New) The OFDM system of claim 14, wherein the first value M and the second value N are integer values.

28. (New) A method of producing a modulated and filtered orthogonal multi-carrier signal, comprising:

increasing a frequency resolution of N data samples by a factor of M to produce increased frequency resolution modulated orthogonal carrier signals; and

conducting MN point time-domain filtering to modify a frequency response of said increased frequency resolution modulated orthogonal carrier signals to form said modulated and filtered orthogonal multi-carrier signal.

29. (New). The method of claim 28, wherein prior to increasing the frequency resolution of N modulated orthogonal carrier signals, the method further comprises generating the N modulated orthogonal carrier signals.

30. (New). The method of claim 29, wherein the generating of N modulated orthogonal carrier signals comprises conducting an inverse Fast Fourier transform on an N sample data frame.

31. (New) The method of claim 30, wherein prior to conducting the inverse Fast Fourier transform, the method further comprises modulating an N sample baseband data frame to produce the N sample data frame.

32. (New) The method of claim 31, wherein said modulating of said N sample baseband data frame includes conducting a phase shift keying (PSK) type modulation of said N sample baseband data frame.

33. (New) The method of claim 31, wherein said modulating of said N sample baseband data frame includes conducting an amplitude shift keying (ASK) type modulation of said N sample baseband data frame.

34. (New) The method of claim 29, wherein the first value M and the second value N are integer values.